

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number

3-07

Other Amendment Number:

Contract Number
EP-D-11-006

Contract Period 04/29/2011 To 03/31/2014

Title of Work Assignment/SF Site Name

Base Option Period Number 2

Method 201A and 202 Revision

Contractor
EASTERN RESEARCH GROUP, INC.

Specify Section and paragraph of Contract SOW
SOW: Section II. N and K

Purpose: Work Assignment Work Assignment Close-Out
 Work Assignment Amendment Incremental Funding
 Work Plan Approval

Period of Performance

From 04/01/2013 To 09/30/2013

Comments:

This is the initiation of a work assignment for the Option II period. Hours have been authorized for the work plan and also for work to begin (300 hours). The contractor is to propose hours for the entire Statement of Work (attached). This work does not duplicate any work previously performed or is currently being performed.

Superfund

Accounting and Appropriations Data

Non-Superfund

Note: To report additional accounting and appropriations data use EPA Form 1900-69A.

SFO (Max 2)

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
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Authorized Work Assignment Ceiling

Contract Period: 04/29/2011 To 03/31/2014 Cost/Fee: LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: Cost/Fee: LOE:

Cumulative Approved: Cost/Fee: LOE:

Work Assignment Manager Name Raymond Merrill

Branch/Mail Code:

Phone Number 919-541-9999

FAX Number:

(Signature)

(Date)

Project Officer Name Karen C. Watson

Branch/Mail Code:

Phone Number: 919-541-3114

FAX Number:

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(Date)

Other Agency Official Name

Branch/Mail Code:

Phone Number:

FAX Number:

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(Date)

Contracting Official Name Rodney-Daryl Jones

Branch/Mail Code:

Phone Number: 919-541-3112

FAX Number:

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(Date)

I. Title: Method 201A and 202 Revision Support
Contractor Name: Eastern Research Group
Contract #: EP-D-11-006
Work Assignment #: 3-07

II. Work Assignment Manager (WAM):

WAM Name: Raymond Merrill
U.S. Environmental Protection Agency
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Alt. WAM Name: Jason Dewees
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North Carolina, 27709
Phone: (919) 541-9724

III. Level of Effort:

Level of Effort: 300 hours (to prepare work plan and initiate work)
Duration 6 Months
Completion Date: 9/30/2013

IV. Background:

Amendments to Methods 201A and 202 were promulgated in December of 2010. The final amendments to Method 201A added a particle-sizing device to allow for sampling of particulate matter with mean aerodynamic diameters less than or equal to 2.5 micrometers (PM_{2.5} or fine particulate matter). The final amendments to Method 202 revised the sample collection and recovery procedures of the method to reduce the formation of reaction artifacts that could lead to inaccurate measurements of condensable particulate matter. Additionally, the final amendments to Method 202 eliminate most of the hardware and analytical options in the existing method, thereby increasing the precision of the method and improving the consistency in the measurements obtained between source tests performed under different regulatory authorities.

These methods apply to stationary sources that are subject to applicable requirements to control or measure total particulate matter (PM), total PM with mean aerodynamic diameters less than or

equal to 10 micrometers (μm) (PM_{10}), or total $\text{PM}_{2.5}$, and where EPA Method 202 is incorporated as a component of the applicable test method.

These methods apply to stationary sources that are required to meet new applicable CPM requirements established through federal or State permits or rules, such as New Source Performance Standards and New Source Review (NSR), which specify the use of Method 201A or 202 to demonstrate compliance with the control measures.

In addition, these methods apply to sources that must comply with State and local agency implementation of condensable PM (CPM) control measures to attain the National Ambient Air Quality Standards (NAAQS) for $\text{PM}_{2.5}$ and specify the use of Method 202 to demonstrate compliance with the control measures.

Since these methods were promulgated, states, local agencies and facilities provided feedback on the clarity and effectiveness of the procedures in the methods. Several topics were identified that require clarification and/or additional laboratory evaluation to promote effective use of these methods.

V. Description and Tasks:

Under this work assignment the contractor shall provide support to evaluate alternative or revised stationary source test methods and monitoring procedures and develop and promote the proper and consistent application of stationary source test and monitoring methods in the development and enforcement of emissions control programs nationally. This work will require laboratory studies, evaluation of data using statistical techniques and reporting of study results.

Method 201A/202 revisions and clarifications included the following topics:

1. Filter decomposition and blank issues,
2. Hexane solvent blank evaluation,
3. Inorganic residue dominating results from organic emission sources,
4. Probe extension blanks issues,
5. Method 201A equations simplification to separate PM_{10} , and $\text{PM}_{2.5}$ sampling rate equations.

Task #1: Work Plan

The Contractor shall develop a work plan and cost estimate. The Contractor shall hold conference calls with the WAM on at least a monthly basis after approval of the work plan to plan and review progress of this WA. The Contractor shall prepare a Category 3 Quality Assurance Project Plan for work performed under Tasks #3, 4, and 5.

Task #2: Task Title: Field Blank Best Practices

1. The contractor shall identify no more than nine (9) test firms who have performed the 2010 revisions to Method 201A since the methods were promulgated. The contractor shall contact this sampling of test firms to determine which one or ones have made systematic improvements to their glassware preparation, solvent/filter acquisition, and in field cleanup procedures. The contractor shall identify best practices used by test firms for minimizing field and laboratory blanks levels. The contractor shall gather information including, but not limited to, the reagent or media type used, the blank typically experienced from the reagent or media, procedures to minimize reagent or media blank contributions, typical glass cleaning procedures, special procedures to minimize glassware blank contributions (cleaning and drying versus high temperature baking), multiple cleaning operations, and glassware proof blanks.
2. The contractor shall contact no more than nine (9) test firms and/or filter media suppliers engaged in Method 202 field testing support to determine which filter media type, size, and manufacturer are used in typical field tests.
3. The contractor shall summarize the procedures used as best practices by each of the interviewed test firms and recommend the best practices that result in the lowest field and laboratory blanks currently being used for Method 201A and Method 202.

Task #3: Task Title: Condensable Particulate Filter Blank

The Contractor shall evaluate the residual blank from “out of the box” filters used to collect condensable particulate matter.

1. The contractor shall acquire filter media that represent teflon membrane filters, teflon backed with hydrophobic and hydrophilic media, polypropylene, and or polyethylene filters identified as those typically used by field test firms. The contractor should limit the diameter of the filter media to approximately 90 mm for evaluation purposes.
2. The contractor shall prepare and analyze a statistically significant number of filters from one lot of each type of media (minimum of 7) following the procedures in Method 202. In parallel, the contractor shall perform reagent blank analysis of the hexane and water used to prepare the filter samples.
3. The contractor shall determine the residual mass and standard deviation of the residual mass measurements using the procedures in Method 202 for each media and for the reagent blanks.
4. The contractor shall prepare and deliver a letter report summarizing the work done in this Task. Critical information that must be included in the letter report includes but is not limited to the filter supplier, filter grade or description, experimental procedures and residual mass results and the uncertainty (standard deviation) of the residual/blank mass found during the evaluation of the each of the filters evaluated.

Example filter types include:

PTFE Membrane Disc Filters –PTFE Support – “Pall Zefluor Membrane”

3 inch PTFE Membrane Filters-50/box (Pallflex 82.6mm) PTFE filter media provides durability for hostile acid acid aerosol monitoring. 1.0µm pore size membrane.

PTFE with PMP (Polymethylpentene) support ring “Pall Teflo membrane”

PTFE Membrane – polypropylene Support – “Pall TF Membrane”

PTFE Membrane filters Hydrophobic –PTFE Coated Glass Fiber Filters - APEX Supply.

PTFE Membrane SF13867 (hydrophobic) (Tisch Scientific)

PTFE Membrane SF 13852 (hydrophilic) (Tisch Scientific)

(<http://www.scientificfilters.com/default.asp>)

Task #4: Extraction Solvent Blank Evaluation

The Contractor shall evaluate residual CPM blank from various reagent grades of hexane solvent and water used to extract condensable particulate from Method 202 samples.

1. The contractor shall identify at least three grades of hexane solvent from major chemical suppliers. The key factor in selecting grades of solvents is the percent residual upon evaporation. Manufacturer’s specifications for solvents selected for this task must meet the minimum specifications defined in Method 202
2. The contractor shall identify at least three grades of water. Grade should include one ion exchange based water meeting ASTM Type II quality, one ultrafiltered water, and one distilled in glass water that carry suppliers specifications meeting the requirement in Method 202. The key factor in selecting grades of water is the percent residual upon evaporation.
3. The contractor shall perform blank determination on a statistically significant number (minimum of 7) of aliquots of each grade of solvent following procedures in Method 202.
4. The contractor shall determine the residual mass and standard deviation of the residual mass measurements using the procedures in Method 202 for each solvent grade.
5. The contractor shall prepare and deliver a letter report summarizing the work done in this Task. Critical information that must be included in the letter report includes, but is not limited to, the solvent supplier, solvent grade or description, experimental procedures and residual mass results and the uncertainty (standard deviation) of the residual/blank mass found during the evaluation of the extraction solvents.

Example suppliers of Hexane solvent include:

GFS Chemicals
n-Hexane VERITAS Ultimate 0.0001% residual

Hexane, distilled in Glass - 0.0003% Residual
Hexanes Reagent (ACS) 0.001% Residual
Hexanes for EPA Method 1664A 1 mg/L Residual

Sigma Aldridge
Hexane Laboratory Reagent, >95% < 0.0015% Residual
Hexane Chromasolv Plus <0.0001% Residual
Hexane Chromasolv for HPLC <0.0005%

Task #5: Task Title: Method 202 Glassware Blank Evaluation

Stakeholders and test firms using Method 202 report field blank results in excess of 2 mg. In addition, test firms report inability to bake the probe extension glassware/tube used for large diameter stacks. This task is intended to evaluate the ability to clean and blank Method 202 glassware as an entire system and to evaluate the potential contribution of individual components of the glassware to the total or aggregate Method 202 glassware blank.

1. The contractor shall identify three sets glassware that have been used for sampling according to Method 202. Glassware for this purpose must be assembled and recovered as specified in Method 202. The contractor will process the blank rinses recovered from these three independent sampling trains and determine the field blank according to Method 202.
2. The contractor shall select one of the three independent sets of Method 202 glassware and sequentially recover two additional field blank samples sets for a total of 3 field blank samples from this set of glassware.
3. The contractor shall select a second independent set of glassware and recover 3 sequential field blanks from separate components of the sampling glassware as follows:
 - a) the probe extension
 - b) condenser
 - c) M-202 impingers and connecting glassware (excluding the silica moisture impinger)
 - d) CPM filter housing
4. The Contractor shall prepare a letter report summarizing the work done in this Task. Critical information that must be included in the letter report includes, but is not limited to, the results of the total Method 202 field blanks, the replicate Method 202 field blanks on one train, and the replicate field blanks on individual components of

the Method 202 glassware. The contractor should determine the average and relative difference or standard deviation of replicate measurements for each of these subtasks.

Task #6: Task Title: Method 201A Sampling Rate Segregation

Method 201A as revised in December 2010 contains equations to determine the correct isokinetic sampling rate for particulate matter greater than 10 µm, particulate matter between 10 µm and 2.5 µm, (PM-10) and particulate matter less than 2.5 µm, (PM-2.5). States and test firms show interest in performing particulate matter sampling at PM-10 or PM-2.5 without the added complexity of the combined method and associated calculations. This task involves preparing the text and equations to sample PM-10 or PM-2.5 separately.

1. The contractor will prepare the text and equations described in Sections 8 and 12 of M201A to include the three options:
 - a. *Total PM/PM-10/PM-2.5*
As currently written in Method 201A.
 - b. *PM-10 collected and determined independent of Total PM and PM 2.5.*
For PM-10 particulate sampling independent of other particulate, the contractor shall use nomenclature and variable names consistent with the current promulgated Method 201A. The contractor may use text and the calculation approach for PM-10 that is consistent with the pre-2010 version of Method 201A.
 - c. *PM-2.5 collected and determined independent of PM 10 or Total PM.*
For PM-2.5 particulate sampling independent of other particulate, the contractor may use but is not limited to existing guidance documents supplied by the WAM.
 - d. The contractor shall prepare text and equations in a guidance document format to be supplied by the WAM.

Task #7 – Method 201A and 202 Blank Data Search and Summary

The contractor shall gather and summarize data on Method 202 field and laboratory blanks from various publically available sources such as professional conferences (e.g., AWMA, EPRI, EPA ICRs). The contractor shall include raw data from field and laboratory reports if this level of detail is available from the source test or laboratory report.

VI. QA Requirements: A category 3 quality assurance project plan is required for the work to be performed under Tasks 3, 4, and 5.

VII. Deliverables:

The Contractor shall adhere to the following schedule:

Task	Deliverable	Delivery Schedule
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1	Work Plan	20 days after effective date of WA
2	Letter Report on Best Practices Interviews	8 weeks after effective date of WA
3	QAPP for Tasks 3, 4, and 5.	8 weeks after effective date of WA or prior to experimental work on Tasks 3, 4, and 5.
3	Letter Report CPM Filter Blank Eval.	12 weeks after effective date of WA
4	Letter Report Extraction Solvent Eval.	15 weeks after effective date of WA
5	Draft Report “Best Practices for M-202 Blank Control”	15 weeks after effective date of WA
6	Revised equations for Method 201A	19 weeks after effective date of WA
7	Data base of field and laboratory blanks	September 30 2013
8	Final Draft of Best Practices	September 30, 2013

VIII. Reporting Requirements:

The Contractor shall provide monthly progress reports in accordance with the terms of the contract. The Contractor shall deliver to the WAM technical work products drafts and final reports in electronic format that is readable by windows-based word-processing (Microsoft Word 2007), graphics (Microsoft PowerPoint 2007), spreadsheet (Excel 2007), and database (Access 2007) programs. The Contractor shall also provide electronic copies of reports in PDF format.

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Base Option Period Number 2

Method 201A amd 202 Revision

Contractor
EASTERN RESEARCH GROUP, INC.

Specify Section and paragraph of Contract SOW

Purpose: Work Assignment Work Assignment Close-Out
 Work Assignment Amendment Incremental Funding
 Work Plan Approval

Period of Performance

From 04/01/2013 To 09/30/2013

Comments:

This amendment recognizes that a work plan and cost estimate have been received. ERG has misinterpreted the technical requirements of task 2 and task 6 and there are minor technical adjustments to task 4 (program manager is aware of specifics). A revised work plan (technical approach) and cost estimate are requested accordingly. This amendment is in accordance with CMM 7.3.5.1(D).

Superfund

Accounting and Appropriations Data

Non-Superfund

SFO (Max 2)

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

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(Signature)

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FAX Number:

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Branch/Mail Code:

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(Signature)

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Contracting Official Name Rodney-Daryl Jones

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FAX Number:

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Washington, DC 20460

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Specify Section and paragraph of Contract SOW

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 Work Plan Approval

Period of Performance

From 04/01/2013 To 12/31/2013

Comments:

This amendment extends the period of performance for an additional 3 months, from an end date of 9/30/13 to 12/31/13. This extension is at no additional cost to the Government.

This amendment is in accordance with CMM 7.3.5.1. (D).

Superfund

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